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ORIGINAL COMMUNICATIONS.

ART. 1.—*European Correspondence.*

LONDON, *October 27th*, 1853.

DR. JOHNSON: Dear Sir: According to promise, I sit down to give you a sketch of men and things in Europe, medical and surgical, as I might see them. Having but a day in London in passing, I improved it by a visit to the Museum of the Royal College of Surgeons, founded by John Hunter. I was informed by the porter that the Museum was closed, and could not be seen for several days—the closing being for the purpose of transferring the specimens to the new Hall, and re-arranging them in the old. On sending my card, with a note of introduction from a member, I was, as a foreigner, readily admitted, and Mr. Quickett, the Curator, and Mr. Luke, the President, immediately met me in the Hall, and in the most obliging manner pointed out those objects of interest for which I particularly inquired. Unfortunately the disarrangement of specimens did not allow him to point out to me more than two illustrating the effects of foreign bodies placed in contact with bone, the special object of my search, and not one of a bone, the union of which after fracture had been effected by means of the seton, wires, or other foreign bodies. Disappointed in this respect, I was not so in others, the Museum being rich in

all the more ordinary specimens. Hunter's experiments on the production of necrosis by separating the periosteum, is shown by numerous preparations of bones of the Ass, in as perfect a state of preservation as the day they were deposited, side by side with pieces of wood, from parts of which the bark had been removed, where the wood, like the bone, was dead. The analogy of the periosteum and the bark was a favorite idea of Hunter.

Hunter's experiments on regeneration of tendon are perfectly shown by his preparations.

Casually pieces of the intestines of Napoleon were pointed out, but the story that they had been demanded by the French Government, as part of the remains, was discredited.

The knife swallowed by a conjurer, and which remained in the stomach for several years, until half rusted away, without much inconvenience, when it produced death by a thrust in the side from an upset of the cart, was also seen.

The duodenum of the woman who died from swallowing bent pins, is preserved perfectly filled with them, as well as several ounces taken from the stomach and intestines, and preserved in bottles.

The collections of Sir Astley Cooper and Mr. Liston have, within a few years been added to this Museum; among the former a case of fracture of the neck of the femur, entirely within the capsule and entirely united by bone, may be noticed. This, it is said, was kept in a private collection, and never shown or alluded to by Sir Astley, although it was known to be in his possession having been presented by a friend.

Among the improvements recently introduced in the College, is a lecture room, arranged for the purpose of teaching microscopic anatomy, the first of the kind ever made use of. It consists of two benches of semi-circular form, with tables in front, upon which the microscope runs, as upon a railway. These are connected with the table of the lecturer, so that the microscope can pass from and to it. The advantages of this arrangement are, that one microscope suffices for a class, and that thirty or forty objects can thus be exhibited to a class in a single hour. This has been introduced

by Mr. Quickett, the Professor of Microscopic Anatomy, who has also added to the Museum about 8,000 specimens to be viewed by the microscope. These are preserved between strips of glass with turpentine in the usual manner. The specimens preserved in fluids are placed in spirit, about five degrees above proof; the bottles are closed by placing over them first, a piece of bladder, varnished, over that a piece of thin lead, lined with tin foil, then another piece of bladder, varnished. The cholesterine which dissolves renders the liquid slightly turbid at a low temperature, but when slightly warmed, it is perfectly transparent and unchanged by time.

The new Hall, into which the specimens are being removed in part, is of vast dimensions and beautiful proportions. It was erected principally by funds of the College, the Government appropriating but a small sum for that purpose. The library contains 30,000 volumes, conveniently arranged in a very fine Hall. It does not contain a single manuscript of Hunter, of all the numerous ones which he left at his death, but the history of their destruction or publication by a high officer of the College, as his own, has never, as yet, been more than partly given to the public. Those best informed seem to know but little of the family and personal history of Hunter. He is buried, it is said, in St. Martin's Church. He left, at his death, a son and a daughter, but whether his descendants are living, I was not able to ascertain. Such men as James Watt and John Hunter are not ennobled in England.

The governor's room contains a portrait of Hunter, by Sir Joshua Reynolds, busts of Hunter, Cline, Abernethy, Sir Astley Cooper, etc. The bust of Hunter shows his head to have been massive, very broad from ear to ear and antero-posteriorly, but proportionally, not high. Cline's is not unlike it in this respect.

The amphitheatre of the College is very handsome and spacious, capable of seating about 500 persons.

Thanks to the temporary closure of the Museum, which enabled me, instead of wandering through the Halls alone, to see the collection under the guidance of its distinguished President and the

Curator, to pass an hour delightfully in interchange of views with them on professional subjects. I hope, on my return from Paris in the Spring, to spend a month in London, and make myself as much acquainted as possible with its different medical institutions and hospitals, when I may note for your readers such progressive tendencies as I may observe. B.

On "Hyperæsthesis Cerebralis:" By T. B. Brown, M. D.

Among the various forms of diseases, which present themselves to the physician as objects of observation and treatment, those of the central nervous system, together with its membranes, may certainly occupy one of the highest places. It is the especial merit of modern medical science, that the material accumulated about this topic has been successfully arranged, and based upon the results of the pathological anatomy. How great the varieties of these forms of diseases are, every one will confess, who has had any experience whatever. Every practitioner will agree, that in such a vast field there is still a great deal left to be done. Therefore I undertook to describe a disease, which three times I have had the opportunity to observe, and which, in regard to its symptoms and course, may not be uninteresting to many of your readers.

Symptoms.—The patients I saw suffering applied for medical assistance on account of being troubled by the most intolerable headache. On questioning them, they all agreed that their sickness had commenced with a certain ill-temper. They had no mind to work, and were struck with sadness, discouragement, anger and apathy for every trifling thing. That stage however lasted but a short time. Suddenly flying and stinging pains were felt through the head, being at first but slight and coming on at longer intervals, but soon increasing to the most intense violence and changing into the most severe headache, interrupted only by a few painless pauses. With the beginning of the now continued and piercing pain, spread over the whole head, a derangement of the general feeling appeared. The patients lost their

appetite entirely, a general relaxation coming on, and impossibility of thinking or acting freely. Sleep was disturbed, short, and vexed by dreams. For the rest the temperature of the head as well as that of the trunk was not raised, the skin not turgent, the pulse still normal, or under the greatest pains scarcely perceptibly irritated, the carotid and temporal arteries did not pulsate abnormally. There was no ringing of the ears, neither a complaint of seeing sparks, nor were the eyes glassy, injected, or painful to light. The head was indeed frequently tossed, being full of ideas and wandering; the headache was also increased by stopping the respiration, but there was no nestling the head into the pillow.— The pupils were not dilated, they reacted as in a normal state.— The tongue was not covered, the taste not altered. There were no pains in the extremities or only of a very slight character. The process of respiration was performed without difficulty; no complaint about a pain in the Praecordia. The abdomen was not bloated, the excretions of the alimentary and urinary organs not checked. That stage of the affection of the head was limited to from three to four days, whereupon gradually other appearances took place.

In connection with the headache at this stage, a violent pain in all the extremities came on, which caused the patients to scream frequently. Tossing desperately in the bed, they were unconscious of their position. It is not a tearing, stinging pain, such as we find in rheumatism, when it attacks the greater or smaller joints or other parts of the system; nor is it the peculiar pain of the limbs occurring in many of the gastric or bilious forms, reflected by the spinal system, for this never shows such an intensity, extent and duration. Likewise it is not the characteristic pain of the arthritis (gout), which in paroxysms, exacerbating under the influence of warmth, still increases and only by keeping quiet after a considerable while ceases again. The pain is neither confined to the joints affected with arthritis, nor has it the nature of such a one; but it attacks suddenly all the extremities, and consists of an extremely smarting, piercing, destroying sensation, so that, as the patients ex-

press themselves, their limbs make an impression as being nearly crushed, and finally are almost senseless from the severity of the pain.

This suffering is to be compared somewhat with that with which typhus patients are affected sometimes on either or both of the lower extremities, as premonitory symptoms of Scrobutus. In such cases the patients define the pain almost in the same manner. From this moment sleep disappears altogether, and it is with weeping and loud complaints that the unhappy patient implores the physician to relieve him from the continually lasting and excruciating pains of the head and extremities.

This stage pursued its course for from two to three days and still longer, without other groups of symptoms appearing except an augmented temperature of the head. All the secretions and excretions going on regularly, the patient still possessed of consciousness. A change takes place, however, at once. The sensorium, deranged as it was in some manner already, becomes still more deeply affected, for the patient is earnestly complaining that he cannot see well. Everything is vanishing before his eye. The mental disturbance becomes complete. Being asked again he declares he sees different colors before his eyes, the objects appear to him now yellow, then blue, green, red, etc; and then they are getting darker gradually, and at length it looks to him, as if between the eye and object in view, something would pass down obscuring the sight. But all that is learned only with difficulty now from the patient, and it is mostly the result of his later remembrance, which reaches only to that point. Everything following is lost to his memory entirely. He is ignorant where he is, is losing his sense, as he says himself, the faculty of coaptation being almost entirely suspended, From this moment all consciousness is completely lost, and delirium is taking place. This may be looked upon as especially remarkable in its nature, for the reason that the delirium of any other disease of the brain is not to be compared with it, either in regard to intensity or duration. The other symptoms are in no way in proportion to this raging ex-

citement. The most extraordinary tide of ideas is manifested; image after image is produced by the perverse imagination of the patient; the place of one, scarcely half carried through, being filled up by another. Now they are employed with domestic affairs, then they are suddenly deprived of their life in a most dreadful manner. Now they are about to disclose their most profound secrets, but scarcely having commenced, they are talking the wildest nonsense. And so the delirium goes on for three or four days without the least remission in the morning or evening. During that time the head of the patient is moderately warm, being tossed sometimes more sometimes less frequently, but never put into the pillows. The carotids as well as the temporal arteries do not pulsate as in inflammation. The eyes are rapidly opened, glancing indeed, but not injected, nor affected by light. There is no apparent strabismus, nor are they turned to any particular direction in a spasmodic manner, as happens in encephalitis. The pupils are not contracted, nor dilated, and react readily. The countenance shows no appearance of wildness, no threatening expression, it is but moderately reddened, the turgesence being slight.—Gnashing of the teeth I never noticed. The tongue is not trembling, it is clean and often dry. Whether the thirst is violent or not, it is difficult to ascertain. The patient eats and drinks, if anything is brought to his mouth. The pulse may be easier suppressed, is not irregular, but only somewhat accelerated; being from 80 to 90 per minute. The agitation of the hands is slight. The patient but seldom grasps the head, the muscular power of the arms is not augmented. Neither here, nor in the head, nor in other parts of the system do spasmodic contraction of the muscle appear; th ere is also neither vomiting, nor paralysis, nor flocci-legium, subsultus tendinum, nor any later symptoms of cerebral depression manifested by sopor or coma.

As for the appearance of the breast, the temperature of the skin is not increased, there is no sweating, the action of the heart is somewhat less distinct. The Thorax is raised perfectly, and the process of respiration is going on normally. The abdomen in this stage is, in consequence of the retained fæces, somewhat dis-

tended, but still there is no pain in pressing upon it. The urine is scanty and contains an excess of salts. The lower extremities like the upper ones are seldom moved, and they are never contracted by spasms. It may appear remarkable, that with this mental derangement, with this dynamic affection of the medullary substance, even after the loss of the faculty of coaptation, not all the main functions of organic life are disturbed. There is left yet for sustaining life: action of the heart, respiration, pulse, nutrition, etc., but sleep has disappeared. The excretion of urine and fæces has become disturbed.

In the manner already described and under such symptoms the patient continues to be delirious, without the least remission taking place for from six hours to three or four days. Suddenly the delirium ceases consciousness returns. He recognizes his locality, clearly distinguishing every object present. The pulse is, in regard to its quantity and quality, just as it was when the delirium commenced. The heat of the head is diminishing, refreshing sleep generally comes on, and in a few hours all the symptoms of his previous condition have entirely passed away without leaving on his memory the least trace of the strange forms which his imagination had devised.

The patient now complains only of considerable pain in the limbs. There is little appetite, the taste not altered. The secretion of urine goes on normally, the fæces, heretofore retained, are discharged again. Thus the patient continues during a remission of from ten hours to a whole day, without any further change being perceivable.

But now the characteristic lancing pain through the head returns, premonitory of the depressing headache. The patient knows it already, and is mostly weeping in advance on account of the pains, which are not long anticipated. With this beginning, the pulse and warmth of the head are increased again. All the above mentioned symptoms appear gradually, until sight is disturbed and the delirium with all the accessory symptoms commence again, and lasting for thirty or more days, in which the paroxysms present no peculiar features. The body itself after so long a time is

not affected at all in proportion to the mental derangement that has been reaching the highest degree of intensity. No apparent debility and emaciation shows itself, no pallor of complexion, etc.; on the contrary, the patients look healthy, a fact indicating that the disease interferes but little if any, with the performance of the functions of assimulation and nutrition.

Termination.—This takes place in two different ways. In the first, the delirium scarcely presents any remissions; it lasts longer, and becomes calmer. The pulse is getting smaller, quicker, thread-like, and it is evident that the patient approaches a state of sopor and coma, accompanied with the well known symptoms as floccilegium, subsultus tendinum, involuntary discharge of the bowels and urinary organs, tension of the abdomen, stertorous respiration, glue-like sweats, covered tongue, and the unhappy patient, who has been afflicted with erethismus before, is dying under the symptoms of oppression and Paralysis of the brain.

In the second place, the delirium occurs at longer intervals, loses gradually its intensity, and is of less duration; the pains of the limbs cease apparently at the same time with the cephalagia; the patient becomes more quiet, and not only remission but also complete apyrexaia takes place, appetite and strength returns, the temperature of the skin becomes normal again, the abdomen is relieved of its tension, all the secretions, as well as excretions, are natural; sleep also becomes more and more regular, and the disease now disappears in a manner as mysterious as was that of its invasion.

The patients describe the peculiar sensation of their convalescence, as if a veil would from day to day fall away from the eyes, so that they not only see every object clearer and more distinctly, but are also enabled to meditate about it with more calmness and clearness.

Diagnosis.—The observing physician may, by an exact and particular examination of the groups of symptoms as well as of the course of the disease, avoid confounding it with other acute inflammatory affections of the brain. It might lead me perhaps too far, and it would also reach beyond the limits of my power, if I

should undertake to give a full statement in a correlative manner of all the diagnostic differences of this disease, in comparison with other cerebral affections. Nevertheless, I am convinced, that a strict examination of the pulse, of the temperature of the skin, of the general condition, and of the fever itself, and especially of the peculiarly long duration of the paroxysms, will enable the physician without difficulty to make a correct diagnosis.

Treatment.—This in its single indications and modifications, is as a "terra incognita," yet to be discovered. But this fact at least is certain, that abstraction of blood, either general or local, has proved decidedly injurious. Experience has established this point beyond a doubt. Sinapisms, blisters, as well as other derivative remedies, have been entirely useless; they did not diminish the evil in the least. In like manner, narcotics seemed to be hurtful. Either the patients went into a state of sopor after administering opium and its preparations in larger doses, or the pains were increased under the influence of smaller doses. In no way however could the delirium be arrested by it. Purgatives were of no evident use. Warm baths were also injurious. But the application of cold, topical as well as general, in the form of effusions, had the most beneficial effect. The ice-cap applied on the head for a long time lessened the pains very much. Shower baths have also been of great benefit. It may appear strange that the patient in the period of convalesence, which is protracted for a considerable length of time, complains of debility almost incessantly, whilst they present a certain staring glance for a long time.

Post-mortem Examination.—If the physician has no knowledge of the disease, confounding it with meningitis or encephalitis, and if he comes to the dissecting table, in order to find his diagnosis confirmed, infallible as he thought it, he will be extremely astonished at once not to find anything in the least degree abnormal. He will find a brain so healthy and sound, that he may well take it for a standard. Not the least vessel congested, nowhere in the substance of the brain a trace of hyperaemia, stasis or inflammation; softening, ulceration, or induration; no atrophy, effusion into the ventricles, or infiltration or change of color of the

medullary substance, nor a pseudo-plastic deposit. The membranes in a like healthy condition without the slightest injection or exudation, in short in the whole mass of the brain and its coverings there is even with the greatest precaution not the least anatomical lesion to be detected. In regard to the condition of the other organs, the agony may be the real cause of their state, as, for instance of the sanguinolent stasis, or of the œdematous infiltration into the parenchyma of the lungs, in consequence of the progressing paralysis of the nervous vagus etc.

Of those three cases thot I happened to see myself, but one recovered, and that under the influence of a merely expectant treatment, an additional proof that there was no material derangement of the brain. This fact as well as the results of dissection might lead us to the conclusion that the disease must be referred to a dynamic disturbance of the functions of the brain, from a certain immaterial, morbid alteration of the medullary substance. The derangement of the organic function in the commencement of the affection may therefore be explained in a like manner, as at the end of it is the inevitable and rapidly following death, owing to a want of regulation of the innervation and of the vegetative functions in general, from whence also the use of the term "hyperæsthesis cerebralis."

Aetiology.—According to the few observations of my own as well as from what I have learned from others, this disease attacks mostly women and the dynamic irritation is produced by too intense emotions as grief from any cause, as death, unfortunate amours, &c.

Prognosis.—This is extremely unfavorable, of the cases I have seen or heard of only a very few have recovered.

Remarks.—I have thus in brief presented the outlines, very imperfectly I confess, from the fact that my observation has been limited, of a disease which so far as I am aware has neve r been described by anyMedical writer either of Europe or this country, and only alluded to by some of the older writers under the term "Mania acuta or Mania acutissima."

More than ten years since my respected teacher Professor Yietl, director of the general hospital at Munich, had his attention called to this disease; since then he has had six more cases, and at that

time suggested the name *Hyperœsthesis cerebralis.* Although this may not perfectly express the nature of the affection, I know of none more applicable. "Encephalitis Nervosa" is objectionable from the fact that it conveys a positively wrong idea. I may say this much in reference to my description of this disease that it is derived entirely from clinical observation. IfI have rendered any service to the science of medicine by what I have written I shall be amply rewarded.

Chicago, Nov., 1853.

Art. III.—*The Influences of Chloride of Sodium on Absorption and Exhalation.* A paper read before the Cook County Medical Society; by Henry Parker, M. D.

Among the most important remedial agents having a special influence upon the processes of absorption and exhalation, and the due interchange of these elements, I may mention, Chloride of Sodium.

This substance, as the Society is well aware, is attracting the attention of medical men, as a remedy possessing peculiar and important powers in the treatment of certain forms and conditions of diseased action.

That a substance of such free and common use, should possess the influences ascribed to it, may materially excite the surprise and distrust of the ignorant and the charlatan; but the man of science, who sees in disease the absence of some element material and essential to the healthy body, or the presence of one unnatural and pernicious, will, when acquainted with its modus operandi, readily understand how it accomplishes certain good.

From some recent experiments, made by M. Bernard, of Paris, upon the effect of this salt upon the blood, he ascertained that it greatly increased the capacity of this fluid for the absorption of oxygen.

Experiment.—Into two graduated glass tubes, containing each equal quantities of pure oxygen gas, he introduced equal quantities of blood freshly drawn from the jugular vein of a dog, without being exposed to external air. One of these tubes contained a small quantity of chloride of sodium. The blood in this tube absorbed immediately 32 parts of oxygen, while the blood contained in the tube with only pure oxygen absorbed only 20 parts.

Observe what a difference in the relative amounts of oxygen absorbed.

As this experiment of M. Bernard was made upon blood out of the body, and without any special reference to the proportionate amount of carbonic acid expired, I was desirous of ascertaining how far the internal administration of the salt, would in its influences upon absorption, affect the exhalation of this excretion, carbonic acid.

With this view, I confined myself for a few days to a diet, plain, simple, and as free from *salt* as could well be obtained.—During this interval, a given quantity of expired air was obtained from time to time in a graduated glass tube of known capacity, over mercury, and transferred to a solution of caustic potassa.

The results of these repeated experiments may be expressed thus:

Whole amount of carbonic acid contained in each given quantity of expired air as indicated by the rise in the tube, 1-25 of a cubic inch.

The experiments were continued sufficiently long to furnish a reliable data, with which to compare future results.

Immediately upon concluding the above experiments, I took liberally of common salt and especially upon going to bed at night.

The amount of carbonic acid contained in the same given quantity of expired air, obtained the following morning, and at the same hour as in some of the preceding experiments, viz., immediately upon rising from bed, was

Carbonic acid, 3-82 cubic inch.

Sp. G. of Urine, 1.035.

This experiment was repeated several times, observing the same diet and, as in the former experiments, with this difference only, that I partook freely of salt, and with the same results as expressed above.

Observe what a material difference in the relative amounts of carbonic acid exhaled in each given quantity of expired air, as ob-

tained from these two series of experiments,—an increase in the latter over the former of 130 per cent.

It will be observed that these inquiries were made with special and only reference to the amount of carbonic acid exhaled, and not with any reference to the quantity of oxygen absolved.

It is very probable, however, that in the process of absorption and exhalation, these two gases sustain certain definite relations with each other. What the proportion which exists between them may be, is not definitely determined. But that the increased absorption of one is attended by a corresponding increase in the exhalation of the other, I think is true. Blood may contain various gases; but it is evident that it never disengages them spontaneously. "They must always be extracted by displacement, in submitting to it some other gas, for which it may have a stronger affinity. This general rule is applicable to liquids,—these can only lose one of their component elements, by receiving a different one. Exosmose and endosmose, must concur." Bernard's experiment tends to establish the correctness of this, when applied to the animal economy. Beneath the skin of a rabbit he injected a quantity of air. In due time this was analyzed, and found, not to have diminished materially in quantity, but to have undergone change. The oxygen only had been absorbed, and carbonic acid occupied its place. From these facts it is very evident that the entrance of one gas into the system, is always attended by the corresponding exit of another. Hence the increased exhalation of carbonic acid observed in some of the above experiments,—the result of an increased absorption of oxygen.

From the preceding inquiries into the influence of chloride of sodium upon the blood, we observed three important facts:

1st. An increase in the capacity of this fluid for the absorption of oxygen.

2d. An increase in the amount of carbonic acid exhaled. And

3d. An augmented excretion of urea.

The effects observed upon these several processes are so marked that every intelligent and scientific physician must see the importance of their due consideration in the treatment of certain forms

of diseased action. With these facts before us, we infer, that the use of this substance is indicated in those diseases, dependent upon or accompanied by, a too small supply of the former, and an undue accumulation and retention in the system of the latter.

Does experience confirm this view, and the results of its use in such cases establish the correctness of our deductions? If we call to mind the pathology of those diseases, in which its use has been attended with the most marked benefit, we observe the existence of one or all of these three conditions, viz.:

A diminished supply of oxygen, with an abnormal accumulation and retention in the system of carbonic acid and urea.

Congestive pneumonia affords us a good illustration of this,—a want of efficient oxygenation of the blood, and the due elimination of carbonic acid and those morbid substances designed for excretion. This want, oftentimes, if not generally, constitutes the only real source of danger to the welfare of the patient. That other means and other remedies may be demanded to subdue the local trouble, to remove the cause, of which this is an effect, I admit; but the period of time required to effect this, is often protracted,—the patient sinking from a want of efficient oxygenation of the blood. This fact indicates the use of such remedy, combined with those adapted to the removal of the cause, as will most effectually promote the due interchange of these elements, viz.:—Oxygen and carbonic acid.

Reasoning then from the known effect of chloride of sodium upon the blood, in promoting the absorption of oxygen and alimination of carbonic acid, we infer that in this substance, do we find such a remedy.

And the fact also, that the greatest apparent good results from its use, when such pathological conditions exist, it seems to me, furnishes strong evidence that its modus operandi, or rather, *morbus curandi*, is through its influences upon absorption and exhalation.

Does the experience of the Society in the use of this substance confirm this view?

In this connection also, I might mention, as illustrating far

ther the morbus curandi of the remedy under consideration, that class of diseases having a malarious origin, as exhibited in intermittent and remittent fevers. It is not my purpose now to attempt any explanation, or advance any theory relative to the exciting cause of these affections, further than to call to mind what has been advocated by the President of this Society and concurred in by others, viz. :

That an important element, concerned in the production and development of miasmatic diseases, is "an atmosphere, saturated with moisture, and constituted in part of carbonic acid, sulphuretted and carbonetted hydrogen, and other gases; such as deteriorate the air, both by their poisonous qualities and by their affinity for oxygen;" in a word, there is "defective oxygenation and an excess of carbonaceous material in the blood and tissues."

Now if this be true, we can readily understand something of the modus curandi of chloride of sodium, when used in this class of affections. That it will arrest the paroxysms of an intermittent or remittent fever quite as effectually and promptly as quinine, all, I think, who have had experience with it as a remedy in such cases, will admit. Whence then this power? What the rationale of its operations? Evidently, is it not, through its influence principally upon the blood, in promoting the ready absorption of oxygen, and the free elimination of those substances having a pernicious effect upon the economy? That it may exert *other* influences, and induce other and important changes in the system, all tending to bring about the same beneficial results, is unquestionably true, but as I purposed only to present a few facts relative to its importance as a therapeutic agent in promoting absorption and exhalation, I omit any further consideration of its modus operandi not immediately influencing this function. Much additional evidence might be adduced in further support of the views presented, but as briefness in *Society Papers* oftentimes constitutes one of their *greatest* merits, if not their only redeeming quality, I submit the subject without further comment, asking for the facts presented and the deductions made, only that candid consideration from the Society which their value or importance may merit.

An Inquiry, Critical and Experimental, into the Pathology of Fever. By N. S. Davis M. D. Professor of Pathology, Practice of Medicine, and Clinical Medicine, in Rush Medical College and one of the Physicians to the Ill. Gen. Hospital.

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On referring to the detail of those cases examined by Dr. Flint, and recorded in his third report, I find that in the *four* cases of *Typhus* examined, death took place on the 11th, 12th, 18th and 13th days respectively; while in the *four* cases of *Typhoid*, the deaths occurred on the 15th, 27th, 25th and 26th days after the commencement of disease. Thus showing a very marked difference between the *duration* of the cases of Typhus and Typhoid, and rendering it more probable that the intestinal lesions of the first were only an earlier stage of development of the same morbid process that was more advanced in the second. This view is further sustained by the well-known fact, that others have reported not only *slight* thickening of Peyer's glands in fatal cases of well marked Typhus, but complete *ulcerations*. Such was the case in the contagious epidemic of Typhus at Rheims, described by M. Landousky, where, in six autopsies, he found thickening and ulceration of Peyer's glands, and enlargement and softening of the mesenteric glands. Indeed, I think if M. Louis himself had found the same *slight* thickening or hypertrophy of the *eliptical plates* described by Dr. Flint in any of his cases of "*Simulated Typhoid affection*," he would have unhesitatingly marked it as genuine Typhoid fever. At the risk of being charged with presumption or temerity, I must express the opinion that there is a radical error in the mode of investigation adopted by M. Louis, and copied, with only slight modifications, by all his followers. This error consists in assuming it as a fact that there are two essentially different forms of continued fever, making the diagnosis during life in accordance with this assumption, rejecting altogether such cases as present an intermediate or doubtful grade of phenomena, and then adducing the differences in the symptoms and post-mortem appearances as proof of the correctness of the original division. I am very sure that the same mode of investigation, applied to other diseases, would compel us to acknowledge at least *three* specifically distinct forms of intermittent and remittent fe-

ver, *two* of erysipelas, *two* of pneumonia, *three* of scarlatina, &c. Suppose we take, for instance, the well marked cases of pernicious or malignant intermittents and remittents, and, after the manner of Dr. Flint, carefully analyse the symptoms during life, and in fatal cases observe the post mortem appearances; and record both in one series of observed facts. Then take the equally well marked cases of *inflammatory* fevers of the same type, analyse their symptoms and post mortem phenomena, and record the same in another series of observed facts; taking care to exclude from both series all cases about which there could be any doubt as to their malignancy, on the one hand, or their inflammatory character, on the other. Does not every practitioner acquainted with these diseases, know that the two series thus made up, would present a far greater contrast in the symptoms during life, the post mortem appearances, the season and locality of prevalence, &c., than either Flint, Bartlett, or any other writer has presented between Typhoid and Typhus?

And yet no one doubts the fact that the cases in both series are mere varieties of the same disease, modified by climate, season, and local circumstances. And why do they not doubt their essential identity? Simply because they see in the same seasons and localities, besides the well marked cases of the two varieties named, numerous other cases presenting symptoms and morbid changes of every intermediate grade of character, until the two extremes are merged into each other so completely as to leave no definite line of distinction between them.

Take out all these intermediate cases, and you have left two diseases strongly contrasted in many essential particulars, relating both to functional and structural changes, with one prevailing most in warm climates, and the other in colder regions. But with the intermediate cases, they are at once inseparably linked together, and shown to be mere varieties of one and the same type of disease. Again, suppose we take scarlatina, and analyse all the cases of a well marked anginose variety in one series, and all those presenting only the phenomena of scarlatina simplex in another series; carefully leaving out of both series all cases so mixed in character as to make the practitioner doubt as to which

series it properly belonged; is it not very apparent that the two series would present very marked differences in the relative extent and frequency of many of the leading symptoms, in the final results and in the post mortem appearances? But my readers are ready to exclaim that this is not a fair and legitimate mode of investigation. That to determine the true relations of any types, forms, or varieties of disease, we must take into the comparison *all* the cases that belong to those forms or varieties.

Thus, in ascertaining the relation between scarlatina simplex and scarlatina anginose, or between an inflammatory and pernicious intermittent, we must include all the intermediate cases, for the very important reason that *these* constitute the link or bond of union by which the other two are made to unite and show unmistakeably their affinity or relationship. But precisely here is the philosophical error of M. Louis and all his followers, in their investigations relative to *continued fevers*. M. Louis and his immediate co-laborers evidently commenced their pathological investigations in the proper mode, by including under one head all the cases of continued fever occurring in the Paris hospitals with which they were connected.

Finding, for a considerable length of time, a close similarity of symptoms during life, and pretty constantly, in fatal cases, evidences of some degree of disease of the follicles or glands of the small intestines, they at once proclaimed these intestinal lesions as the *essential* characteristic of the fever. But a continuance of the same investigations soon brought to light cases presenting the same phenomena during life, but without any visible intestinal lesions after death. These cases placed the investigator in a dilemma. To call them typhoid fever, would contradict the already published opinion that the lesions of the mucous membrane of the ileum were the *essential* characteristics of the fever. To call them by any other name would be to disregard the plainest identity of origin and symptoms. Hence there was no alternative but to call them "*simulated* typhoid fever," and place them in a separate list. Of course, after adopting this arrangement, M. Louis found more or less of the peculiar intestinal lesions present in *every* case of true *typhoid fever*; simply because all cases des-

titute of such lesions were placed in another list with another name, no matter what might have been their symptoms during life. So easy a method of disposing of a difficult question could not fail to find followers.

Hence, when Stokes and Graves, of Dublin; Watson, of London, and many others, found in the same hospitals and during the same seasons, half of the fatal cases of what they regarded as common continued fever, destitute of the lesions pointed out by Louis, they were at once told that they had confounded two essentially distinct diseases—that only those presenting the intestinal lesions were true typhoid, while all the rest were either *simulated* typhoid or typhus. Drs. Gerhard and Jackson, on their return from Paris, brought the same ideas to Philadelphia and Boston. Gaining access to the hospitals of those cities, they soon demonstrated by post mortem examinations, that the true typhoid intestinal lesions existed in a large proportion of the fatal cases of continued fever occurring in the wards, and straightway the Parisian distinction into typhoid and typhus was established on this side of the Atlantic. It is necessary to bear in mind that this distinction, both in Paris and elsewhere, had its origin exclusively in the morbid anatomy or post mortem appearances, without the least reference to the causes of the fevers or their symptoms during life. For, if two cases were brought from the same ship, or alley, or house, and one was found to linger with a continuous fever from three to six weeks, and terminate fatally, after more or less liquid discharges from the bowels and tympanitic distension of the abdomen, with visible thickening and ulceration of the glandular patches in the ileum, it was called true typhoid fever. But if the other betrayed a more profound depression of the vital powers, earlier delirium, a quicker pulse, more extensive engorgement of the spleen, lower lobes of the lungs and brain, and terminated fatally within the second or near the beginning of the third week, without any marked change in the glands of Peyer, it was, of course, typhus. Having thus founded a division of continued fevers on a particular anatomical lesion, the next step was to establish the diagnosis during life. To accomplish this the recorded histories of a long list of fatal cases, presenting the intestinal lesions, were carefully com-

pared with an equal list of cases in which such lesions were absent. Such comparison, resulted in the discovery of certain general differences in the symptoms during life. For instance in the first list of cases diarrhœa or liquid stools were *more frequently* present than in the second, the abdomen was *more frequently* and decidedly tympanitic; when an eruption appeared over the chest or abdomen, it was in the form of *brighter red and more elevated spots;* the average duration of the disease was *longer;* and much the *larger* number of cases occurred during the summer and autumn months. These general differences, derived thus from *numerical averages*, were seriously arranged side by side in parallel columns, and handed down to us as the basis of diagnosis at the bed-side of the living patient. Guided by the general differences thus pointed out, most subsequent writers, especially in this country and on the continent of Europe, have endeavored to maintain the distinction. But to do so with some degree of clearness, they have uniformly been compelled to throw out of the comparison a considerable list of cases called *doubtful.* Not because it was doubtful whether they were genuine cases of continued fever, but because the symptoms belonging to the fever were so mixed as to render it *doubtful* whether they belonged to the list of typhoid or typhus. Thus Dr. A. Flint in his elaborate comparison of the histories of 164 cases of continued fevers, first avails himself of all the means of diagnosis pointed out by his predecessors, and then sets aside about one eighth of the whole number as *doubtful.* Not because he had any doubt about their being fair cases of continued fever, but because their symptoms were so mixed or of such a character as to leave some doubt whether in the aggregate they belonged to the typhoid or typhus class. Having set aside all the cases about which there could be any reasonable doubts, expressly as he says, to avoid including in either series of cases, any but such as were *well marked*, he finds on careful analysis and comparison sufficient differences to convince him of the essentially distinct characters of typhoid and typhus. The deceptive and illogical character of this mode of investigation will be made abundantly apparent, by applying it to the study of other diseases. Every practitioner extensively acquainted with remittent fever, as it presents itself through a series of

years and in different localities, is aware that in so me seasons an localities a very large proportion of the cases, manifest an early tendency to the development of sub-acute inflammation of the portal viscera and intestinal mucous membranes, diminishing, in its progress, the *periodicity* of the febrile symptoms, and finally establishing a protracted typhoid condition, often ending in death; while in other seasons and localities, an equally large proportion of the cases manifest an early tendency to the development of cerebral, cerebro-spinal, and pulmonary congestions of sub-acute inflammations, and a much more speedy termination either in recovery or death.

It is equally well known that ordinary remittent fever seldom terminates fatally except by the supervention of some one or more of these local affections.

Now suppose some American Louis, located somewhere on the rich alluvial Prairies of the West, should chance to meet, for two or three years in succession, remittent fever manifesting chiefly the tendencies first named. If he makes a careful *post mortem* examination in each case he will find uniformly evidences of inflammation in the abdominal viscera, such as enlargement, induration, or suppuration of the Spleen or Liver or both, and redness, thickening, softening and perhaps ulceration of the mucous membranes. Evidences of these being uniformly present, though to a very variable extent, he confidently proclaims them as the essential and characteristic anatomical lesions of Remittent fever. But in the progress of time other cases even presenting the same general symptoms during their progress, and even terminate fatally and on examination none of the previously specified lesions are visible. These, however, are regarded as mere "*simulated*" Remittents. Meanwhile other practitioners occupying a field of practice in a different latitude habitually meet with many fatal cases of fever of a distinctly Remittent type, which in their character strictly correspond with the second class mentioned above.

On instituting careful post-mortem examinations the lesions are found not in the abdominal, but chiefly in the head and chest. Forthwith a controversy arises.

The Louis of the West has promulgated the doctrine that cer-

tain abdominal lesions are characteristic of Remittent fever, and many others on making examinations have found the same and corroborated his doctrine. But a large number of others, occupying different locations, have found in a majority of their fatal cases, such lesions entirely absent.

This leads to a careful comparison of the histories and symptoms during life, of those presenting *abdominal* lesions after death, with the histories of such as present anatomical lesions *only* in the head and chest. Taking the numerical averages derived from such comparison, and it is found that certain symptoms derived from disturbance of the cerebral and respiratory functions are earlier and more constantly present in the latter class of cases than in the former. They are also characterized by earlier prostration, and a shorter average duration of the disease. They, *too*, are found to occur more frequently in the spring and latter part of autumn. While the former class more frequently run a protracted course, present early indications of gastric, hepatic, and intestinal disturbances, a quicker and smaller pulse, more frequent tympanitic distension and tenderness of the abdomen, and occur much the most frequently during the months of July, August, and September. Finding the foregoing differences between the two classes of cases, to be pretty constant, Louis and his followers declare them to represent two essentially different fevers; the former class only, representing the true Remittent, and the latter a separate disease, which might be called periodical or malarious typhus. Still cases belonging to both classes are so frequently met with in the same locality, during the same season, and some of them presenting such a combination of the leading symptoms of both varieties, that a large proportion of practitioners continue to regard them as originating from the same general cause and as mere *varieties* of the same general type of fever. But some observer patiently records the the history of one or two hundred cases, placing all those presenting marked symptoms of abdominal complications in one list; those presenting no local complication or such only as occur in the head and chest in another; leaving all such as present symptoms so mixed as to render it difficult to say whether they ought to be ranked with one class or the other, to constitute a separate list of doubtfu cases.

Having thus obtained two lists of well marked cases, their comparison with each other, of course, discloses differences well calculated to corroborate the idea that they represent two essentially distinct fevers; and the observer becomes a convert to the doctrines of our supposed Louis. No one can fail to see the folly of such a mode of investigation. If you take a chain, the links of which are large at one end and taper gradually smaller as you approach the other, strike out a section in the middle embracing several links, and then compare the two ends, there will be no appearance of their ever having constituted parts of one continuous chain.

So if you take any general febrile disease, which is subject to great variations in its specific character, grade of severity, complications, and final tendencies, as it appears in different seasons, and contrast any two of its most strongly marked varieties, excluding all the intermediate links, they will most certainly present abundant differences both in the symptoms during life and in the anatomical lesions after death. But include in the comparison *all* the cases of the same type that occur during a series of years, and while you find one series of the cases prevailing most at one season, and presenting more prominently certain symptoms during life with corresponding lesions after death; and another series prevailing most at another season, with other symptoms most prominent followed by correspondingly different lesions; and you will also find numerous other cases not strictly belonging to either of these series, yet occurring indiscriminately with both, and presenting symptoms and lesions of such a character as to constitute a prefect bond of union between them, merging the two extremes so completely that "*no line of genuine distinction*" is left between them. And yet it is by unphilosophically setting aside these intermediate cases, thereby striking out the middle links of the chain, that a contrast is obtained sufficient to found a claim to specific difference.

To obviate the force of the foregoing illustration as applied to the different varieties of continued fever, some have suggested, that each variety constitutes a distinct and essential fever, arising from a distinct or specific cause; while those cases of intermediate grade, presenting mixed phenomena, have their origin from the co incident action of the causes of both inducing a blending of types and

the production of a true hybrid disease, constituting the simulated typhoid of M. Louis and the doubtful cases of the other writers.

But this suggestion is more plausible than sound. For if the *causes* of both typhoid and typhus fevers are so closely related as to act simultaneously and conjointly upon the same individual, in such a manner as to produce an association of symptoms common to both, there must be a close analogy or mutual relationship between such causes. So much so, indeed, as to enable them to act *not only* on the same functions and vital properties, but also to influence such functions and properties in the same direction. This again, instead of sustaining the position that the varieties of continued fever, are so many essentially distinct diseases, would rather show that they were all variations of one general disease, such variations depending on diversities of season and peculiarities of cause, &c.

That we may have the causes of essentially different diseases acting upon the human system at the same time, and thereby inducing in the progress of the resulting disease, certain modifications of its symptoms I have no doubt. I have myself seen in a section of this city occupied chiefly by the *shanties* of poor foreigners, unmistakeable evidence of the co incident operation of malaria or the cause of Intermittents with all the circumstances usually regarded as efficient in developing typhus. In that locality I have seen the Intermittent cases presenting symptoms of unusual depression, such as a heavy depressed expression of the countenance, feebleness of the pulse, an unusual degree of languor during the intermission, and a greater proneness to dysentery; but aside from these modifications, the Intermittents and Remittents have uniformly presented their own peculiar and well known periodical phenomena from the beginning to the end. On the other hand, I have seen in the same district, late in the Autumn and during the Spring months, well marked cases of typhoid and typhus fevers, in which the only symptom of a *malarious* influence presented during their progress was a little greater tendency to daily remissions than usual; but after the continued fever had ceased and convalescence was fully established, the patients have been attacked with well marked paroxysms of Intermittent fever; requiring the usual anti-periodics

to arrest their progress. In none of the cases, however, have I seen the *active* and *diagnostic* symptoms of the periodical and continued classes of fevers, combined so as to manifest themselves at the *same time* in the *same* patient. The two sets of causes may co-exist, but one or the other will predominate and give its own unmistakeable character to the disease until its force is spent, when the other may become predominant in its influence; as when ague is developed during the convalescence from continued fever. But I very much doubt whether two causes or agents essentially different in their properties, and capable of generating in the system, two distinct *general* diseases, can both operate simultaneously, in such a manner as to develope their own legitimate influences together; thereby constituting a true blending of distinct types or the production of a hybrid disease. They may so quickly follow each other in their effects, as to leave some of the more lasting symptoms of each visible at the same time. For instance, the specific poisons which cause the well known eruptive fevers, first affect the whole system, inducing general febrile action, and secondarily cause a local eruptive inflammation on the skin which may continue sometime after the general or constitutional action of the cause has ceased. Hence a patient may be exposed to the contagions of both Variola and Varicella, and after the first has induced its usual severe general fever and thrown out its specific cutaneous eruption, the latter may take effect and establish its peculiar eruption interspersed with the other. And so of other specific diseases. But we have no evidence that the constitutional or general febrile action of any two of them actually co-exists. There are, however, many diseases both general and local, which may be induced by the action of several causes. This is the case with nearly all the simple phlegmasia.

I think it is equally the case with the simple continued fever, or as Dr. G. B. Wood styles it, the "irritative fever." I have already defined *fever* to consist essentially, in a disturbance of the natural condition and relations of those properties which are inherent in all living organized matter. Hence it might be said with propriety that every cause or agent capable of acting on or disturbing such properties, throughout all the tissues, is sufficient to generate fever.

The particular type or fever will depend on the *specific direction* in which the vital properties are altered. Thus the contagious viruses that cause the acute Eruptive fevers, by their presence in the blood, simply *exalt* the universal and inherent susceptibility of the whole organism and soon establish a local disease in the cutaneous tissue. The exalted susceptibility and consequent universal functional disturbance, constitutes the *febrile stage*, which has no element or symptom that will uniformly or even generally serve to distinguish it from a simple ephemeral fever arising from any other cause. The specific modus operandi of these viruses is exhibited not in any uniform peculiarity of the febrile phenomena but in the accompanying or succeeding cutaneous affections. The former may arise from sudden exposure to cold, from over-exertion, from errors of diet, from teething and worms in children, from acute local inflammation in some important organ, and from any other cause capable of so increasing the organic susceptibility as to produce general functional disturbance. But in none of these cases will there be any specific cutaneous eruption. Hence they are called by Dr. Wood irritative fevers; by Cullen they would be included in his class called Synocha; and by others they would be designated *simple continued fevers.*

Exaltation of the organic susceptibility, however, constitutes change in but one direction. Other causes may alter the same vital property in an opposite direction, or may continue this in the same direction and along with it develope other elements of morbid action so as to produce essentially different results. Hence instead of simple exaltation, there are many causes which directly lessen both the organic susceptibility and the vital affinity between the blood and the tissues. Such lead equally to universal functional disturbance, and consequently to general fever; but instead of irritative or inflammatory febrile action with increased sensibilities, they induce a grade of fever characterized by feebleness of organic action, blunted sensibility, and early disposition to prostration; constituting the *asthenic* or typhoid and typhus forms. Among the more common causes capable of altering the vital forces or properties in this direction, are the *protracted* influence of a low temperature; insufficient nourishment; foul air produced by too small,

ill-ventilated, and over crowded apartments; and by the accumulation of filth and animal excretions in camps and jails, in emigrant ships, and the alleys and narrow streets of cities; and protracted mental anxiety and watchings, or depressing mental emotions.

All these, and others that might be enumerated, alter the elementary properties of the blood and tissues in the same *direction*, though not always to the same extent; and hence they all induce functional and febrile disturbances of the same general character. But there is still another cause or agent capable of inducing general fever, which cannot correctly be ranked with those that simply exalt or depress the organic properties. This agent is the specific cause of Intermittent and Remittent fevers. It is likened by Dr. Drake to the narcotico-irritant poisons, possessing a two-fold effect.

But the comparison is not strictly accurate. The malaria or specific cause of periodical fevers, exhibits no true *narcotic* properties; although its *irritant* qualities are plainly visible. By the latter it exalts in a marked degree the susceptibilities of the system giving to the febrile exacerbations a high grade of irritative excitement; while in the place of a *narcotic* influence, it produces such an effect on the vital affinities of the blood and tissues as to arrest the further formation of red corpuscles in the blood, and cause their usual relative proportion to diminish. In this, and the more distinctly paroxysmal character of the febrile exacerbations, consists the special peculiarities of what are styled malarious fevers. From all these observations it is evident that we must look for the *basis* of a rational *classification* of fevers, neither to the particular *causes*, nor to the *anatomical changes* revealed by post-mortem examinations; but to the specific *mode* or *direction* in which the *elementary properties* of the organism are altered in the development and active progress of the disease. On this basis we may reduce all the essential, idiopathic fevers to *three* great classes, viz.:

First: Those characterized by irritation or exaltation of the elementary properties, constituting irritative fever, and the co-existing development of a specific cutaneous or anginose inflammation. They are very properly styled the *Eruptive class.*

Second: Those characterized by irritation or exaltation of one elementary property, viz.: organic susceptibility, thereby develop-

ing true irritative fever; by depression of tonicity or vital affinity in such a manner as to arrest the development of red corpuscles in the blood, inducing rapidly a change in the relative proportion of its constituents; and by the whole duration of the disease being divided into well marked paroxysms or exacerbations and remissions. These are styled the *Periodical Class*.

Third: Those characterized by uniform diminution of the tonicity or vital affirmities of the organized textures, coupled with either simple exaltation or depression of the organic susceptibility, but without the exhibition of either uniform and successive paroxysms with impoverishment of blood globules, or specific and constant cutaneous eruptions. They may be called *Continued fevers.*

The first of these classes arises from specific contagions, each of which induces a pretty uniform series of morbid phenomena, among which is the cutaneous eruption which is of chief importance in determining the diagnosis. The prevalence and character of the fevers belonging to this class, are but little influenced by season, location or climate.

The second class arises also from one general specific cause; and all the varieties tend to the production of the same class of morbid changes in the system, and to the same ultimate results. But the morbid phenomena resulting from the action of the specific cause, are sufficiently varied to require the division of the class into several distinct varieties or sub-divisions.

The varieties of fever composing the *third* class, have their origin in the action of a much greater number of causes, either acting together or singly, and hence they are much more varied in their active phenomena, average duration, and ultimate results.

None of them are *uniformly* characterized by specific eruptions, like the the first class, nor constant periodicity with rapid diminution of certain proximate elements of the blood, like those of the second; and yet cases frequently occur presenting scattered, non-inflammatory, but generally evanescent eruptions, sometimes in the form of elevated *rose colored spots*, and sometimes of a more papular appearance; and other cases again present a visible tendency to exacerbations and remissions. But both the eruptions and the appearances of periodicity, occasionally presented by fevers of this

class, are extremely variable, both in kind and degree; thereby presenting a marked contrast in these respects with the first two classes. Again, in proportion as the varieties of the third class arise from a greater number and combination of causes, they present a less constant and uniform succession of phenomena, and consequently admit of a less perfect and clearly defined diagnosis. The sub-divisions of the first class are based essentially on the specific characters of the eruptions belonging to each variety. Those of the second, are made to depend exclusively on the *degree* of *periodicity*. While those of the third, are based on the much less easily defined grade of febrile action, and the special direction given to the alteration of the elementary properties of the tissues; and hence they are much more likely to become insensibly merged into each other, leaving but an obscure line of of demarcation between them.

The following classification may be stated in the tabular form as follows, viz.:

CLASSES.	VARIETIES.
1st, Eruptive Fevers,	Variola, Varicella, Rubeola, Roseola, Scarlatina, Erysipelas,
2nd, Periodical Fevers,	Intermittent, Remittent, Yellow Fever.
3d, Continued Fevers,	Simple Fever, Complicated Fever, Asthenic or Typhus Fever.

A careful examination will show that each of the above classes, and all the varieties included in them, possess prominent and constant peculiarities, in reference both to their active phenomena and results, sufficient to entitle them to the grouping already named. Thus far I have said nothing concerning the Cullenian classificatin of fevers under the names Synocha, Synochus, and Typhus; not,

however, because that arrangement was not founded on the actual phenomena of febrile affections, but because it was better fitted to characterize the different cases of the same class, and different stages of the same case. The essential foundation of the classification of Cullen, was the *grade* of febrile action. Thus his Synocha was a true inflammatory or stenic grade of fever; his Synochus commenced with a moderately stenic grade of action but soon verged into prostration; while his Typhus was from the beginning Asthenic. But every practitioner will find all these forms in each of the classes above name. Variola, for instance may present every *grade* of febrile action from the most inflammatory to the most asthenic or typhoid. So too with the periodical class. We find Intermittents and Remittents of an inflammatory or *Synocha* type; others beginning with this grade and running into a lower form, representing the *Synochus;* and still others even more asthenic than the most profound typhus. The space alloted to me in one number of the Journal will be devoted to an examination of the causes of fever, after which I will endeavor to point out the indications of treatment, indicated by the pathological views advocated in these articles.

SELECTIONS.

From the London Lancet.

A Case of Erectile Tumor of the Orbit, Cured by Infiltration with the Solution of the Lactate of Iron and Puncture with Hot Needles, after the Ligature of the Carotid Artery had failed; with observations on the effect of that Solution in obliterating the Bloodvessels. By DANIEL BRAINARD, M. D., Professor of Surgery in Rush Medical College, Chicago, Illinois, late Vice-President of the American Medical Association, Etc.

WILLIAM W——, a farmer, aged thirty-four years, of good constitution, consulted me, August 1st, 1851, on account of a tumor of the left orbit. The eye was prominent, but could be closed; it rose perceptibly with the pulsation of the arteries, and gave a thrill on being touched. On placing the ear in contact with the tumor, a loud blowing sound was heard, which could be perceived, but less distinctly over the whole head. The veins of the face were prominent; the head was hot, and the arteries of the neck and head pulsated with unnatural force. Severe pain was often felt in the head, attended with nausea and vomiting; pressure on the left carotid instantly stopped the pulsation and sound.

History.—On the 14th of July, 1851, the patient received a severe kick from a horse on the left side of the lower jaw, which fractured it on the right side, and otherwise severely injured him. On recovering from the shock, he first perceived the sound in his head. This circumstance was calculated to mislead the surgeon into the opinion of a traumatic aneurism; but on a careful inquiry I found that the left eye had long differed from the other, principally in being short sighted. Finding compression could not be borne on account of the great tenderness, I advised the ligature of the left common carotid artery; but the patient's mind being unprepared for so serious an operation, he returned home, with the direction to adhere to a rigid diet, rest, and the application of ice or iced-water. Instead of strictly following this advice, he consulted various practitioners, regular and irregular, using by their direction every kind of application. About the first of November following he returned to me. The disease was greatly aggravated. The globe of the eye was protruded, the lids could not be

closed, the conjunctiva was ulcerated, and the thrill could be clearly heard over the whole head. His general health had sufferred much, and he has had several attacks, which he called bilious, and for which he had been purged and kept upon a strict diet for many days. Vomiting had increased the size of the tumor; he had severe pain in his head, and could only get relief from large doses of morphine. He had great heat in the head, and only slept by having cloths dipped in cold water kept constantly on it. He was now anxious to have the operation performed, which was done on the 11th November in the usual manner, the artery being tied about an inch below the division. No unusual symptoms occurred. Immediately after the operation the pulsation and sound in the tumor ceased.

The next day, the 12th, he complained of some pain in the right side of the head, and the capillaries of that side became greatly injected from the effort to establish the collateral circulation. A blood-letting of eight ounces gave great relief. The ligature came away on the fourteenth day. Immediately after the operation compression was attempted upon the tumor; but so acute was the sensibility that nothing more than the weight of a fold of linen, could be borne. Bags of pounded ice and salt were applied round it, and evaporating lotions upon it. Under this treatment, which, with a rigid diet, was continued, the tumor diminished in size; still on the third day after tying the artery a careful examination detected a slight pulsation and sound in the tumor. This continued, the tumor still subsiding. He left me on the 10th December. His health continued poor, and he was not able to attend to his business for several months. He noticed the sound of the circulation occasionally after the operation, and it gradually became more constant and stronger. He was often seized with what he called a bilious attack, which continued a day and a half, and was attended with severe retching and vomiting; at such times there was a marked increase of pain and swelling, which thereafter became constant. In October, 1852, the cornea had disappeared, the conjunctiva projected in a fungous shape, and several hemorrhages occurred, from rupture probably of the superficial vessels.

On the 11th November, 1852, just one year from the first operation, he returned to me. At this time the entire orbit was filled, the lower lid was concealed by the fungous projection, the eye pressed outwards and downwards, and at the root of the nose and inner part of the superciliary ridge was an elastic swelling, which had caused the absorption of the bone. It was at that point that the pulsations were the strongest, and the thrill the most distinct. The small vessels of the forehead and side of the nose were

greatly enlarged, pulsated strongly, and the latter gave the peculiar thrill of the disease very sensibly. His general health was much impaired, and he had been able to come to the city by railroad only with great difficulty.

The question of the proper treatment to be employed in a case of erectile tumor of the orbit, when the ligature of one carotid has failed to effect a cure, is one of some difficulty. The attention is naturally turned to the other carotid; but even if the ligature of that were likely to succeed, the risk in this case was too great, since it was found that the compression of it for a few seconds rendered him perfectly insensible. None of the means resorted to for the purpose of obliterating this tissue had ever been tried on deeply-seated tumors like those of the orbit. On carefully reviewing them all, it was determined to try puncture with hot needles. This was done first on Nov. 13th, 1852; the needle used was of the size of a common knitting-needle, sharpened to a triangular point, and set in a handle of bone. After being heated in the flame of an alcohol lamp, it was plunged into the tumor about an inch from the root of the nose, in the course of the superciliary ridge, and carried downward and backward to a depth of over three inches; on withdrawing it, some bleeding followed, which was readily stopped by slight pressure. For two days there was little pain or swelling; but on the third day the inflammation was acute, the swelling extending over the face, and presenting an erysipelatous appearance. On the fifth day this began to decline, and in a week was nearly gone. While the inflammation was at its height the tumor was more firm and the thrill less distinct, but as it subsided the elasticity and pulsation rapidly returned.

Nov. 25th.—I repeated the operation, making the puncture half an inch nearer the nose, and carrying it to the depth of only one inch. The effects corresponded with those before described, but were a little less violent. On the third day the sound was diminished, and the firmness of the tumor very sensibly increased. On a careful examination it was found that the morbid tissue extended over the bridge of the nose and down to the inner canthus of the right eye, where a thrill could be distinctly felt.

Dec. 2nd.—A puncture was made on the left side of the bridge of the nose, the needle beeing carried obliqely upward and to the left side. The inflammation resulting from this puncture was acute, and a superficial supuration occurred about it. The thrill upon the right side of the nose quite disappeared.

The effect of these three punctures was to limit the spread of the tissue upon the forehead and nose; but the inflammation although acute and extensive, was superficial, and the mass of the disease at the centre was still unaffected. It was evident that the

needles cooled in passing through the tissues, so as not to cauterize much below the surface.

It was therefore determined to change the treatment, and inject a fluid into the centre of the tumor capable of effecting its obliteration. For this purpose a solution of the lactate of iron, of eight grains to one fluid ounce of distilled water, filtered through paper, was preferred. The reasons for believing in the safety of this remedy will be given below.

14th.—I punctured the tumor at its most prominent part with the infiltrating canula, carrying it to the depth of about an inch; on withdrawing the stylet arterial blood followed. A fluid drachm of the above-named solution was immediately thrown in with a small syringe, constructed for the purpose and the canula withdrawn. The immediate effect was an intense pain in the left temporal region and a flushing of the face, which latter only lasted a few seconds. A chill followed, accompanied with nausea and vomiting. Reaction took place in an hour, but the vomiting continued, and for twenty-four hours all drinks were ejected; pulse sixty-three.

15th.—Vomiting continues; pain less; upper lid much swollen; pulse 65.

16th.—Vomiting less; no pain; has slept well; pulse 60; swelling increased, and so tender as not to bear the slighest touch.

23rd.—For the last six days the vomiting has gradually diminished; the pulse is natural; the tumor is less tender, firm, and the pulsation perceived only at the external angle; frequent lancinating pain is felt in the orbit.

During the whole of this treatment, both of puncture and infiltration, the head has been kept enveloped in bladders filled with a freezing mixture of pounded ice and salt; which was very grateful to the patient. He now began to complain of its being too cold. The heat in the head was reduced to the natural standard, and from the time of the infiltrati on neither thrill or sound has been perceived. The veins of the face were much diminished in size, and the pulsation of the arteries reduced to its natural state. A slight pulsation was still perceptible at the angle of the eye, a puncture was made at that point, with a hot needle, on Jan, 4th, 1853.

Jan. 10th.—From the time of the last puncture no pulsation has been perceived, the swelling subsiding. At this time an opening was found to exist on the anterior surface of the globe of the eye, which still remains protruded between the lids. This was followed by severe inflammation of the globe, which lasted several days. The discharge from the opening was at first the humours of the eye, afterwards pus, but no blood.

Feb. 5th.—Swelling gradually subsiding; tumor firm, no pulsation; but little pain. The patient slept for the first time for more than a year without some one to keep wet cloths upon his eye, dressed himself, and walked about the house; health good.

March 5th.—Swelling entirely disappeared; the globe of the eye perfectly collapsed; lids closed.

June 6th.—The patient has been pursuing his ordinary occupation for three months; his health appears perfectly restored.—The left orbit seems entirely excavated and free from all disease.

At this time he was presented at the annual meeting of the Illinois State Medical Society, and examined by a large number of its members, who concurred in the opinion that the cure might be regarded as perfect.

Remarks.—It will readily be understood that so serious an operation as throwing a fluid drachm of a solution of the lactate of iron, at a point almost to saturation, directly into the current of the circulation, would not be ventured upon without the most satisfactory reasons for regarding it, firstly, as safe; secondly, as effectual. I propose now to offer briefly some of the reasons for so regarding it.

In 1850, I was engaged in making inquiries concerning the effects of this salt in certain diseased states of the system, and was induced, from certain theoretical views, to try the effect when thrown into the veins. Before doing this upon the human subject, I tried it upon a dog, dissolving, rather imperfectly, ten grs. of it in one fluid ounce of distilled water, This was thrown at once into the saphena vein of a middle-sized dog, and the experiment was twice repeated without any ill effect.

In December, 1851, I first used it upon the human subject, using in the course of eight weeks nineteen grains of the salt in solution. The largest amount injected at one time was three grs., dissolved in three drachms of distilled water. The number of times it was employed in this subject was nine. It had no ill effects, but the contrary; what is pertinent to our present subject is, that each of the veins into which it was thrown at the bend of the arm was found after a certain length of time to be obliterated, and converted into a firm cord, without there being produced either pain or perceptible inflammation. I have since used it in four other cases,—in two of them once, and in the other two twice each,—without any unfavorable effects. In one of these cases, in which it was used twice, a vein was opened a second time, three days after the first operation, but it was found filled at that point with coagulum, which of course was not disturbed, but the injection made by another vein. Its tendency to obliterate

the veins by a gradual process of thickening their coats and obstructing the circulation, was thus made sufficiently apparent, while its safety, used with requisite precautions, was clearly demonstrated. As these cases related solely to the veins, before using it in the case of tumor of the orbit, in which it might enter directly into the arterial circulation, it was thought proper to try it upon an artery in a dog. Accordingly, three grains of the lactate dissolved in three fluid drachms of distilled water, were thrown into the carotid artery of a small dog, and the vessel tied. The only effect was a slight irregularity of the action of the heart, which continued but a few seconds. As this entered directly into the cerebral circulation, its safety when used in much smaller quantity, in the human subject, might legitimately be inferred.—The result, as used upon the tumor, fully justified its employment, although the effects produced were somewhat severe. They were greatly less so, and less dangerous, than those resulting from the ligature of the carotid artery; and used in smaller quantity, repeated if necessary, it seems to promise relief without the necessity of resorting to that operation.

I may add here, that I have since used the same solution upon an erectile tumor of a venous character, of the size of a pigeon's egg, upon the inside of the lower lip, by injecting it at three different times, without any other effect than a slight tenderness, followed by gradual diminution of size and induration of tissue; but the cure is not yet complete.

The applicability of this practice to the treatment of varicose veins and aneurisms will readily suggest itself, but further experiments will be required to determine to what extent it can be relied upon in these cases. The number of the *Revue Medico Chirurgicale de Paris* for May, 1853, contains some interesting experiments by M. Pravaz, M. Giraldes, and M. Debout, on the coagulation of the blood in the arteries of animals by the injection of a solution of the perchloride of iron, and also three cases in which it had been used for the treatment of vascular tumor in the human subject, in each of which suppuration, and in one, gangrene followed. These results are not of a nature to encourage further trials of that substance; but if we take into consideration that the solution of the perchloride of iron is a substance foreign to the normal constitution of the blood, and produces instant coagulation when brought in contact with it, whereas the solution of the lacate of iron is composed of elements which enter into the composition of the blood; that when thrown into the living vessels it does not coagulate it, but produces a thickening of the coats and a deposition of coagulable lymph from subacute inflammation; the difference between the two results will be readily un-

derstood. It is probable that the solution of the lactate, when thrown into the vessels immediately undergoes decomposition, the acid combining with the soda of the blood, and the base passing into a higher state of oxydation in which it naturally exists in that fluid. In no case has this solution, when thrown into the blood or into a vascular tumor, shown a tendency to produce suppuration, but a slow inflammation of an adhesive kind and limited extent. In one case, where it was inadvertently pressed in small quantity into the subcutaneous cellular tissue, instead of into the vein as intended, a hard swelling having all the appearance of a boil or small carbuncle was the result; but even this effect will not be produced by it, when used in that manner, unless the solution be in a certain degree concentrated.

From the American Journal of the Medical Sciences

Occlusion of the Vagina: Operation: Recovery.

Dr. Storer read the following cases, sent to him by Dr. Brainard, of Chicago.

July 7, 1852, I visited Mrs. ——, a young married woman, æt. 19 years, in the central part of Wisconsin, on account of an obstruction of the vagina.

On attempting to pass the finger into the vagina, it was arrested at its very orifice. Immediately behind the carunculæ myrtiformes there was a firm cicatrix which entirely shut up the passage, there being a transverse band from side to side, both above and below which there was a slight depression scarcely half an inch deep. On introducing a catheter into the bladder, and the finger into the rectum, the septum seemed thin, and not as thick as the natural septum of the bladder and vagina. The uterus was felt distended, filling up the cavity of the pelvis, and rising so as to be felt in front two inches above the pubis. She was constantly affected with severe expulsive pains.

This young woman, who was but 19 years of age, and presented appearances of not fully developed womanhood, was married on the 8th of October, 1851. About the 20th of November following, she was attacked with great pain, hemorrhage, profuse discharge of pus and mucus. There was constitutional disturbance of the severest kind, and her life was despaired of. There followed a discharge of shreds and sloughs, horribly offensive, which continued several weeks. This attack was taken for an abortion, but without good reason. It was simply a violent case of acute vaginitis, from too frequent sexual connection with the sexual organs imperfectly developed. She informed me, in answer to in-

quiries, that coition was very painful, and became more and more so.

Pains, indicating the return of the menstrual period, occurred February 1, 1852, and recurred twice at four weeks' interval, without discharge. From that time. the pains were continuous up to the time the operation was performed, the uterus gradually enlarging.

Operation, July 8, 1852. The patient being placed in a suitable position, an incision was made from before backwards through the band before described, extending the diameter of the vagina. The sides being separated by the finger, it was found that the mucous membrane of the rectum could be separated from that of the bladder with the point of the finger, without great violence. When a band of tissue resisted, it was divided with a blunt-pointed bistoury.

The separation was freely made to the uterus.

Here, however, instead of finding the os uteri, nothing but a smooth, round tumour presented itself. The finger was carried over its surface, and the surface denuded for a space at least two and a half inches in diameter. Finding no mouth, I determined to make a puncture at a point where a slight elevation was felt, and where it was presumed the os had been situated before it sloughed away. Accordingly, I made an incision in the form of two-thirds of a circle an inch in diameter, raising up a piece attached towards the anterior part. There was a copious discharge of the menstrual blood. The wall of the uterus was thick, and gave the sensation of fibres in cutting. Passing the finger within, a slight depression was found opposite the little tubercle noticed externally, seeming to confirm the idea that this was a vestige of the neck.

After treatment, a tent, or pessary, one and a half inches in diameter, made of pieces of sponge strung together upon a stick, and covered with oiled silk, was passed into the artificial vagina. The point was sufficiently small to press into the opening of the uterus, and the whole long enough to project externally. The case was intrusted to the care of Dr. Robert W. Earll, to whom, and to Dr. Axtell, I was indebted for assistance.

Not a bad symptom occurred; no swellings, and but little inflammation. August 25, she was able to walk from her room without difficulty.

Four months after the operation, November 8, she was well, doing the work of the house, and able to ride several miles. The cicatrization was perfect, at least that was Dr. Earll's opinion.—The menses have occurred regularly without pain, excepting the first, August 20, which was painful. She is unwilling to dis-

pense with the pessary, as she experiences a sensation of falling of the womb without it, even when lying. Sexual connection is not painful, and there is no tendency to contraction.

May 30, 1853.—She continued in the same satisfactory condition.

Occlusion of the Vagina and Uterus.—I was called, May 25, 1853, to visit a patient with the above difficulties.

She was a young and healthy woman, who was delivered of her first child in January, 1853. The labour was difficult, lasting 48 hours, and was finished by cephalotomy.

About the first of April, 1853, Mrs. C. discovered that the vagina was closed.

On examination, it was found, indeed, that a perfect closure existed, commencing immediately behind the orifice of the canal, and extending back as far as the finger in the rectum could reach.

Being consulted at the time it was discovered, I advised no operation to be performed until several menstrual periods had passed, and the uterus and vagina were distended in some degree with the fluid.

Early in May, they wrote me that such was the case, which I found afterwards was probably not so.

May 25, 1853. I performed the operation in the same manner as in the case of the former patient.

The vagina was entirely obliterated and adherent, except a small piece in front of the os uteri.

The os and cervix were found of their natural form and position; but the os was closed. There was no distention with menstrual fluid. An incision was made across the mouth of the womb, and a catheter passed into it. A large tent, one and a half inches in diameter, was passed into the vagina, and the patient put under the influence of a full dose of morphia.

July 7. I have not yet received a report of the progress of the case from the physicians who had charge of it.

From the American Journal of the Medical Sciences.

Case of Cartilaginous Exostosis of the Condyle, Ramus, and Angle of the Lower Jaw, for which Resection with Removal of the Parotid Gland and Zygomatic Arch was successfully performed. By Daniel Brainard, M. D., Professor of Surgery in Rush Medical College; President of the Illinois State Medical Society, etc.

W. S., æt. 32 years, formerly of good constitution, first perceived, in October, 1850, that the movements of the lower jaw were imperfect. Soon after, he noticed a swelling at the left side

of the articulation. It was hard, unattended with pain or discoloration, and increased slowly. In February, 1852, an abscess formed upon the side of the neck, below the angle of the jaw, from which, when opened, a fistulous passage leading to the bone remained. Some months afterwards, another abscess formed in front of the ear, from which pus and saliva were discharged.—Another formed upon the zygoma. During the whole of this time, the patient's health was not materially impaired.

He was treated principally with different preparations of iodine, internally and externally.

Present State, Jan. 19, 1853. There is a hard tumour, extending from the temple above below the angle of the jaw and from the middle of the cheek to the ear. It is very prominent and irregular, and has on its surface three fistulous openings, corresponding to the situation of the abscesses. They were found to converge toward the articulation. The mouth could be but slightly opened, but enough to enable me to perceive that the tumour encroached upon the fauces and pharynx. There is pain most severe at night. When he eats, the saliva flows freely from the middle fistula. His health is good, no sallowness, and only a little emaciation, which dates from about a month.

Operation performed Jan. 27, 1853, with the assistance of Drs. Herrick, Freer, and Morfit, as follows:

The patient having been placed under the effect of chloroform, a curved incision was made, commencing an inch above the zygoma, carried down in front of the ear over the angle of the jaw, and brought forward as far as the side of the chin. The flap was raised, and the integuments dissected up from the surface of the tumour behind.

The bicuspid tooth was extracted, the tissues detached from the jaw, and the bone divided with a chain-saw.

At this stage of the operation, it was necessary to allow the effects of the chloroform to pass off, as the flow of blood into the mouth and throat rendered it necessary that it should be constantly ejected.

The separation of the tumour below and within was next effected, as far back as the mastoid process, against which it was placed.

An attempt was now made to turn it outwards, but it was still almost immoveable, and it was necessary to attack it from above.

The temporal muscle was divided, the zygomatic arch cut away at its anterior and posterior extremities, the massete muscle divided, and a chisel and mallet used to separate the articulation; but the bones were so confounded together, that a

part of the glenoid cavity was cut away. A lever being inserted behind the tumour, strong efforts were made to turn it forward, but without success. It was then attacked from within; the pterygoid muscles, which were semicartilaginous, were divided at their attachment to the pterygoid processes. The mass was then raised from its position, and its remaining adhesion separated.

The vessels which gave blood were very numerous. The facial, lingual, external, carotid and numerous smaller branches, required the ligature.

The ninth pair of nerves, the portio dura, and the dental branch of the lingual were divided.

On examining the wound, it was found to lay bare the cornu of the os hyoides, the mastoid and styloid processes, and the transverse processes of the cervical vertebræ. The internal jugular vein and the internal carotid artery were seen at the bottom of the wound. The temporal fossa was excavated, the muscles of the tongue and pharynx laid bare. The parotid gland had been partially obliterated by pressure, and no trace of it now remained.

The wound was brought together by stitches, and cold-water dressings applied. A full dose of opium was administered. The operation, which lasted an hour, was well borne.

After treatment, no symptoms requiring especial notice occurred. The ligatures were all removed by the tenth day. The wound had adhered throughout, excepting at the point where the ligatures prevented.

Dec. 5. The patient's health is good. He can sit up and walk about, but requires an anodyne at night, on account of pain.

July 17. There still remains a fistulous opening, leading to the situation of the glenoid cavity, through which a small piece of bone has been discharged. The lower jaw has fallen so much to one side that the patient cannot masticate. He is emaciated, and appears to be suffering from inanition, resulting from insufficient nourishment. He still requires anodynes to procure rest at night. There is no appearance of return of the disease.

On examination of the tumour, the bone seemed greatly enlarged in every sense, the ramus of the jaw and the angle were four times their natural thickness, the condyle partially absorbed and altered in shape. This mass which had the appearance of bone, and from which the periosteum could readily be separated, was so soft as to be easily transfixed with a sharp instrument. The surrounding tissues were infiltrated with serum

and had an appearance like firm jelly, but, after maceration, presented no appearance of morbid deposit.

Chicago, August 1, 1853.

From the Transactions of the Illinois State Medical Society.

On the Uses of Turpentine. By SAMUEL THOMPSON, M. D., Albion, Ill.

IN presenting this paper to the Society, my object is to call the attention of the profession to the therapeutic application of an article well known to all and much used by some, but which, as far as I am informed, has hitherto received but occasional notice, and been applied to its most important uses by only a few individuals.

In my own neighborhood, and among most of my professional friends, it is only a few years since even its use in combination with castor oil, when administered as a purgative, was looked upon with astonishment and distrust; and I well remember the difficulty I had to induce my patients to swallow what they had never known to be prescribed by my predecessors.

Hitherto I believe turpentine has in most cases been prescribed empirically, each individual prescribing it, applying, if he had a turn for such reasoning, (theorizing it will perhaps be called,) his own explanation of its modus operandi. Now it is the fashion to speak very slightingly, and very philosophically of attempts to ascertain the mode of action of medicines; but I must confess, that I belong to the few who consider that it is *not* visionary to seek to know how medicines produce their effects, and that just in proportion as we arrive at that knowledge, will be the scfentific accuracy with which we shall prescribe them. I shall in this paper, therefore, endeavor to present what time and circumstances have enabled me to collect of the opinions and the experience of others as to the uses of turpentine in disease, adding the results of its use in my own practice. And I think it will thence be seen, that the cases in which it has been successfully applied, will point to its modus operandi, and at the same time mark out a wide range of affections, involving similar functional or structural derangements, though in diseases bearing different names, and to which very different organs are subject, and in which cases we shall find it a useful agent and trusty friend.

In looking over systematic works and periodicals for what had

been written on this subject, I find that the diseases in which turpentine has been recommended, are :

Iritis, by five authors.*

Typhoid pneumonia, by one.†

Amaurosis, by one.‡

Tania, by one.††

Hemorrhage from mucous surfaces, and also in cases of purpura, by six.‡‡

Dysentery, by four.**

Colic, by one.¶

Congested and distended state of rectum, by one.¶¶

Ulcers, by two.***

See also Wood's Practice of Medicine, for its uses in typhoid fever.

In my own practice I find I have notes of about thirty cases, in which I have prescribed it; namely, in dysentery—nine cases, one was accompanied with hæmatemæsis; in diarrhœa, bloody—three cases; in diarrhœa, white—one case; in typhoid fever, with intestinal hemorrhage—three cases. In one case the patient died, but she had been half murdered by a quack before I saw her, and even then, from the carelessness of the nurses combined with the obstinacy of the patient, who was violently delirious, it was only partially administered; in colic, one case—the patient was a toper and a tobacco chewer; in pneumonia, secondary on measles, where the symptoms rendered the use of mercury objectionable. In the spring of 1852 prescribed it in about twelve cases.

The first of these recorded cases in which I have used it, bears

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*No. 1, Braithwaite, Jan. 1840, p. 87—Arnott & Foote.
14, Braithwaite, July, 1847, p. 268—Langier.
12, do. July, 1845, p. 236—Graves.
Wharton Jones Ophthalmic Surgery.

†No. 2, Braithwaite, July, 1840, p. 53—Martin.

‡No. 5, " Jan., 1842, p. 133—Hocken.

††No. 6, " July, 1842, p. 64—Bellingham.

‡‡No. 7, " Jan., 1843, p. 87—Willshere & Copland.
12, " July, 1845, p. 132—Neligan.
19, " Jan., 1849, p. 143—J. P. Vincent.
American Jour. Med. Sciences, 1850, No. 39, p. 198—T. Smith, John Hunter.

**Trans. Am. Med. Association, 1851, p. 455—Dranghon.
Am. Journal Med. Sciences, 1851, p. 366 and 367—Shattuck.
St. Louis Med. Jour., May, 1852, p. 209—John Long.
Western Jour. Med., July, 1822—Durrett.

¶Am. Jour. Med. Sciences, July, 1851, p. 79—Parker.

¶¶No. 15, Braithwaite, Jan., 1847, p. 115—Dick.

***No. 14, " July, 1847, p. 321—Hancock & Heister.

date 24th July, 1851, and, though I do not now remember upon whose suggestion I was first led to use it in the bold way I have since done, I suspect it was the paper of Dr. Hughes Willshire, in the 12th number of Braithwaite's Retrospect, on its uses in purpura, and wherein he mentions Dr. Copland's view of its modus operandi, to be absorbed into the blood, and its thence producing an astringent effect upon the capillary vessels, that first drew my attention especially to it, as likely to fill a void in therapeutics which I had long felt. The usual quantity which I have administered to an adult in either dysentery or hemorrhagia, has been a common tea-spoonful with from four to six drops of tinct. opium every two or three hours, and given in either milk, mucilage or coffee, and for younger persons in proportion. In several cases, chiefly in those frightful hemorrhages occurring in the latter stages of typhoid fever, its use has been continued for two or three days, or even longer, gradually making the intervals between the doses wider as the flow of blood decreased. In one nearly fatal case its use was combined with the exhibition of injections into the bowels by means of an œsophagus tube, in the first instance using acetate of lead, tinct. of opium and water, and afterwards, that proving inefficient, giving infusion of matico with tinct. of opium, after which the hemorrhage ceased, but the patient was almost in articulo mortis. Two or three days after there was a slight return of the sanguinous discharge, which again stopped upon administering the turpentine. I gave the turpentine in combination with nitric ether also in one case, during the collapse stage of cholera, though only one dose could be got down; at first it appeared to cause some distress, but in a few minutes the patient seemed much better, and spoke clearly for the first and only time after I saw her, but she was quite cold and pulseless everywhere, except on the scalp and epigastrium, and sunk in a few hours.

In July last I administered it in one case to a child, 11 months old, suffering from choleric diarrhœa, which in the first attack had evidently been of an intermittent type, and had been relieved by quinine, &c., but the little patient had subsequently been allowed to eat uncooked green peas, which occasioned a violent relapse.—In this case ten drops of turpentine with one to three drops of laudanum were given every three hours, (the child's skin was quite cold), but it sunk in a few hours from the continued passive discharge of bloody water.

Among the nine cases of dysentery above referred to, one was dying when I first saw it; in nearly every other case the symptoms were relieved in from a few minutes to a few hours; indeed, so prompt was the relief from the tormina and tenesmus, that af-

ter the first, the patients were in general very ready to take the medicine, to which at first they felt an almost insuperable aversion.

One of the cases of bloody diarrhœa accompanied a severe attack of remittent fever. and was immediately relieved by the turpentine, etc. In another case the attack was distinctly of that adynamic type, of which so many cases occurred during the last cholera epidemic; it also was promptly relieved The other case referred to was a bloody diarrhœa that supervened on an attack of milksickness, in an individual previously in a low state of health, and which for a time threatened to finish what the milksickness had left undone; but it was promptly and effectually relieved by the turpentine.

In the early part of the spring of 1852, measles was epidemic, especially in the regions bordering on the streams; the weather was cold and wet, and, though the robeolous symptoms themselves were generally easily managed, several cases of pneumonia, from exposure, accompanied by a very troublesome diarrhœa or a dysentery occurred, and these same conditions, as the consequence of exposure during *convalescence*, were also very frequent. After resisting the most assiduous use of the usual remedies indeed, the very circumstance of diarrhœa accompanying a pneumonitis, greatly curtailed the usual list of agents, In these cases I found valuable aid from turpentine, generally in combination with spts. ether nit. and tinct. opii. Now I am by no means inculcating the idea, that turpentine is in these cases the specific; for, in fact, I believe before we can find specific remedies, we must so contrive, that diseases shall always have specific grades, and operate always on similar constitutions, and after similar predisposing causes. But I submit, that if we look over the cases referred to in my practice, (I have not copied the details on account of room), and in like manner analyze the cases in our periodical and systematic works, to which I have referred, it will be seen, that in all these cases the structures involved were much the same, the nature of the lesions essentially similar; let us pass them in a brief review.—Iritis—the iris is a fibrous structure, covered with villi floating in a fluid, and devoid of cuticle, thus approximating in its surface and in many of its conditions to mucous membrane. In typhoid pneumonia, in amaurosis (from congestion or pressure of course only), in ulcers, in hemorrhages from any natural outlet, in dysentery, and the various diseases in which it is reported to have been used, the conditions present are essentially derangements of mucous membranes. Then in all these cases involving lesions of this peculiar structure, a structure unprotected by superincumbent parts, and unsupported by a cuticle, but composed almost of a network

of capillary vessels, which, from their peculiar position, are specially liable to congestion, and consequent distension and obstruction, we find good testimony that turpentine has rendered good service. Let us see what the action of other approved remedies suggests in reference to the manner in which these diseases can be relieved. In iritis we trust to mercury, and mercury we know to have a tendency to attenuate the blood, thus fitting it more readily to pass through obstructed vessels, and rendering it less liable to coagulate therein. We believe also that it promotes absorption of matters already deposited, in virtue, no doubt, of some power it exerts on the minute vessels. (Query. Does not the information supplied by the principles of exosmoses and endosmoses suggest, that as a vessel in a state of congestion absorbs but little, whatever causes its contents to be lessened, increases its absorbing power?) In passive hemorrhages and in dysentery there must be a deranged condition of the coats of the bloodvessels,* as well as probably an abnormal state of the blood; and this we must suppose to be the case in most of those ailments involving the mucus membrane.

In hemorrhage we give acetate of lead with a view to its astringent effect. Alum and nitrate of silver are used for the same ends. In dysentery it has been recommended by high authority‡ to give large, aye, even ounce doses of cream of tartar, frequently repeated, or sulphate of magnesia in small doses, at short intervals, and in some seasons I have known both of these courses of treatment eminently successful; such cases, I presume, being characterized by active congestion of the mucus membrane of the bowels, and the hydragogue action of these drugs acted as local depletives of the engorged organs, while they exerted also a refrigerating influence on the irritated surface. Others again have trusted to calomel and opium, even to ptyalism, or opium alone in heroic doses; in either of these cases, I doubt not, either treating a different shade of the disease, or acting through a different channel of impressibility perhaps simply lulling the excitement of the system, till nature in the round of her functions could restore the balance of action. But I have tried all these, and at times have found each of them to answer; and then again, in another season, and under another epidemic or endemic condition, have been just as bitterly disappointed in their effects; and this, I doubt not, has been the experience of every observant physician.

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* Wood's Practice of Medicine, vol. 1, p. 257, remarks: "It is impossible to conceive of a discharge of blood without a morbid state of the vessel."

‡ Stokes—Bell & Stokes, vol. 1, p. 211.

EDITORIAL.

The Action of Medicines in the System; or, "On the mode in which Therapeutic agents introduced into the Stomach produce their peculiar effects on the Animal Economy:"—being the prize Essay to which the Medical Society of London awarded the Fothergillian gold medal for, *MDCCCLII.* By FREDERICK WILLIAM HEADLAND, B. A., M. R. C. S., &c. Philadelphia: Lindsay & Blakiston. 1853. 8 vo. pp. 560.

AMONG the various departments of medical research, there is no one perhaps of more practical importance, or presenting greater claims to the attention of the Medical Profession, and more earnestly demanding a diligent, careful, and thorough investigation, than the one to which the above Essay is devoted. It is a subject full of interest and importance, not only as contributing in its results to the advancement of Medical Science, but also in its great practical application in the treatment of disease. And its investigations, if conducted upon scientific principles, and with a spirit of patient, but determined inquiry, cannot but be productive of great good. It is a humiliating fact, that this subject, a knowledge of which is so important and essential to the judicious application of therapeutic agents, should have received so little attention from medical men, for while other sciences and other inquiries into the various departments of medical science, have advanced rapidly and with certainty, this has made comparatively but slow and uncertain progress. But few indeed, have given it that earnest and careful study, so essential in the investigation of science. True, classifications of medicines have been made, based upon their observed effects, and various opinions and theories been offered from time to time, in explanation of the modus operandi of medicinal agents. But theories, however ingenious and plausible they may be, without some degree of proof, are comparatively valueless. Facts and facts only should be admitted as constituting the *basis* of our reasoning. Hypotheses may often give to our thoughts and investiga-

tions the right direction, and conduct us ultimately to the glittering ore of truth, but too often they are founded in error, and based on false supposition. 'This confounding of assertion with fact,—the mistake of hypothesis for truth' is an error into which many have fallen, and the conclusions deducible from such, must necessarily be incorrect.

Dr. Headland in the dissertation before us seems to be fully sensible of this great error. He says: "in such illogical and incorrect reasoning is to be found the true source of a multitude of errors."

"Every branch of study," *Whately's Elements of Logic*, as quoted by our author, "which can at all claim the character of a science requires two things: 1st. A correct ascertainment of the data from which we are to reason; and 2d. Correctness in the process of deducing conclusions from them."

That the subject is one of magnitude, and presenting many difficulties, all will admit;—the 'difficulty, as Dr. Headland truly says, 'depending mainly on the variety and complexity of the proof required to establish any one point with absolute certainty." Probably on no question in the wide range of medical inquiry, have scientific men differed more widely, than on the *modus operandi* of medicines. This diversity of opinion, is evidence in itself, of the difficulty of furnishing proof sufficient to establish the correctness of what may seem plausible and reasonable in theory.

But, notwithstanding all these difficulties and uncertainties, some progress has been made, some error exposed, and truth elicited. It is most earnestly to be hoped, that the period has passed, when men are seemingly content with simply knowing the ultimate effect of a remedy. While the causes and symptoms of disease are being daily unfolded to our view and better understood, let those who feel a further interest in the advancement of medical science, and the alleviation of human suffering, emulate the undertaking of Dr. Headland, and ere long, "instead of our present indecision and uncertainty on many points, we shall find ourselves eminently qualified to wage the conflict with disease, being skilled in that science whose name bespeaks its importance,—the Science of ***Therapeutics.***

Dr. Headland in the 1st chapter of his book, after briefly speaking of the extent and difficulties attending his undertaking, proceeds to an exposition of the plan pursued, dividing his subject into *ten distinct propositions*, forming the basis of his essay, each of which he will attempt to prove separately.

As the principal conclusions to which he arrives are embodied in these, we present them.

PROP. I. That the great majority of medicines must obtain entry into the blood, or internal fluids of the body, before their action can be manifested.

PROP. II. That the great majority of medicines are capable of solution in the gastric or intestinal secretions, and pass without material change, by a process of absorption, through the coats of the stomach and intestines, to enter the capillaries of the Portal system of veins.

PROP. III. That those medicines which are completely insoluble in water, and in the gastric and intestinal juices, cannot gain entrance into the circulation.

PROP. IV. That some few remedial agents act locally on the mucous surface, either before absorption, or without being absorbed at all. That they are chiefly as follow :—

a. Irritant Emetics.
b. Stomach Anæsthetics.
c. Irritant Cathartics.

PROP. V. That the medicine, when in the blood, must permeate the mass of the circulation, so far as may be required to reach the parts on which it tends to act.

That there are two possible exceptions to this rule :—

a. The production of sensation or pain at a distant point.
b. The production of muscular contraction at a distant point.

PROP. VI. That while in the blood the medicine may undergo changes, which in some cases may, in others may not, affect its influence. That these changes may be—

a. Of Combination.
b. Of Reconstruction.
c. Of Decomposition.

PROP. VII. That a first class of medicines, called Hæmatics, act while in the blood, which they influence. That their action is permanent.

1. That of these some, called Restoratives, act by supplying, or causing to be supplied, a material wanting; and may remain in the blood.
2. That others, called Catalytics, act so as to counteract a morbid material or process; and must pass out of the body.

PROP. VIII. That a second class of medicines, called Neurotics, act by passing from the blood to the nerves or nerve-centres, which they influence. That they are transitory in action.

1. That of these some, called stimulants, act so as to exalt nervous force, in general or in particular.
2. That others, called Narcotics, act so as first to exalt nervous force, and then to depress it; and have also a special influence on the intellectual part of the brain.
3. That others again, called Sedatives act so as to depress nervous force, in general or in particular.

PROP. IX. That a third class of medicines, called Astringents, act by passing from the blood to muscular fibre, which they excite to contraction

PROP. X. That a fourth class of medicines, called Eliminatives, act by passing out the blood through the glands, which they excite to the performance of their functions.

It will be observed that the *first* four of these propositions, relate to the conduct of medicines after their introduction into the stomach and before their passage into the blood; that the fifth is simply an extenuation of the first, while in the sixth, it is asserted, that medicines undergo certain changes in the system.

The concluding and most important of all, treat of the *action* of medicines in the system, or 'of the various modes in which they may operate in the *cure* of disease.'

From these it will be seen that Dr. H. divides medicines into our great groups or classes.

In relation to the 1st class,—*Hæmatics*,—our author observes that they are the most important of all medicines, their action being particularly directed towards the blood itself. Medical authors, with few exceptions, have been very backward to acknowledge the existence of medicines of this description. And yet they have been obliged to confess, that there is a set of remedies which they call "Alteratives", whose action is slow and more durable than any

others. "But, whatever their subsequent action, they exert a primary and apparant influence on the blood itself. A little reflection will convince us that these remedies are more efficient than any others that can be selected out of the armory of physic."

Of this class of medicines Dr. H. makes two divisions,—viz:

Restoratives and Catalytics. The former act by supplying to the blood a material wanting, as Iron in Anæmia. This division is again divided into six orders,—1st. Alimenta; 2d. Acida; 3d. Alkalia; 4th. Tonica; 5th. Chalybeata; 6th. Solventia; each of which is considered separately, and the important medicinal agents embraced by each, enumerated.

In relation to Tonics, of which Quina, may be taken as the type of the whole order, Dr. H. considers that they are not in the first instance Neurotic medicines as some are disposed to contend. He says, "The action of other nerve-medicines is distinguished by the following signs. It is quick, and very rapidly follows the administration of a substance. It is transient and does not endure. It requires no particular state, but takes place in health: thus Alcohol stimulates and intoxicates both healthy and sickly, and Digitalis would subdue a Hercules. Most Neurotics are capable of acting without entry into the blood at large; mere contact with the nerves, as when they are applied externally, being sufficient for their action on those nerves" * * * Now is the primary action of Tonics distinguished by the above signs? Are they quick and sudden in action? Is their effect transitory? Is it evidenced in health as well as in disease? Do they act on the superficial nerves, when applied to them? In each case the answer must be a negative." As additional evidence to prove that Tonics are blood medicines, and should be classed as Restoratives. Dr. H. proceeds next to show, that those disorders in which their use is attended with the greatest benefit, are *blood-diseases.* There are few we imagine, who will give the subject a moment's careful reflection, but will be convinced that this is true. In the condition of simple anæmia, we observe a deficiency in the hematosin of the blood, an element natural and essential to the healthy body, indicating the use of chalybeate medicines. Simple Debility, arising from what-

ever cause, is traceable to a want of some material, essential to the healthy condition of this fluid. It follows protracted disease, miasmatic influences, and whatever contributes to impoverish the blood, which while they arrest or interfere with the assimilative and building up processes, tend to destroy and remove those elements upon which the strength and tonicity of the system depends. There is a loss of *vital power*, and the consequent existence of a loose and lax condition of muscular fibre. To restore the one and give tone and firmness to the other, requires an improvement in the quality and condition of the blood. This is the office of Tonics, their influence being most marked. But stimulants in such cases are not only of no benefit, but of positive injury. They never increase or exalt *vital* force only when its deficiency or want is occasoned by a loss of *nervous* energy, as exhibited in depression arising from some sudden or accidental cause. We cannot be too careful in distinguishing between *vital force* and *nerve force*. Too often we fear, they are regarded and treated as identical. And the same remark is equally applicable to Tonics and Stimulants. Hence the frequent administration of the latter, when the former alone are indicated, and vice versa. There may be a difficiency or loss of *vital* power as observed in simple Debility, arising from waste and excretion of important elements in the blood, by which it has become impoverished, while *nerve* force may remain normal. Here the use of Tonics is indicated; but where it follows sudden depression or loss of *nerve* force, and upon which it depends, they are of little or no avail. Here Stimulants are demanded to arouse nerve energy which is weighing down the vitalforces.

Our author's views on the peculiar action of Quina are new and interesting, but our limited space willn ot admit of their notice here. To the Second Division of Hæmatic medicines Dr.H. applies the name *Catalytica*, on the supposition that their action in the blood results in destroying or counteracting certain morbid agencies as mercury in syphilis. This division is divided into eight orders, named according to the several morbid states in which they are used, viz.: 1st. Antiphlogistica; 2d. Antisyphilitica; 3d. Antiscrobulosa; 4th. Antiarthritica; 5th. Antiscorbutica; 6th. Anti-

periodica; 7th. Anticonvulsiva; 8th. Antisquamosa, each of which is considered separately, and the more important remedies, whose peculiar action and influences are expressed in the above orders, are enumerated.

From the want of space in the present number of the Journal, we are compelled, unexpectedly, to omit any further notice of this Division, and also of three remaining classes of medicine, Neurotics, Astringents and Eliminatives.

The fourth chapter, "*on some of the more important medicines in particular*" must likewise be omitted. But we may have occasion hereafter to speak of these, and of some views there advanced. We have peruse Dr. Headland's book with pleasure and profit, and we most cheerfully commend it to our professional brethren, believing that in their perusal of it they will be both instructed and benefited. Occasionally our author has indulged in loose and indefinite expressions, and we think erroneous assertions, but nevertheless, we welcome it as an undertaking of the right kind,—a step in the right direction, and we hope and trust that the facts it presents and suggestions made, will awaken a deeper interest and a stronger desire to know more of the *modus operandi* of medicine. P.

Wilde on diseases of the Ear. Philadelphia: Blanchard & Lee.

Of all the branches of surgery that relating to diseases of the ear has probably been most neglected, and it is for the purpose of rescuing these diseases from the hands of quacks and charlatans, that Mr. Wilde has sought in his book to make them a more general object of attention and study. The work before us is full and ample, giving evidence of being written by one whose object is to describe accurately,; and those descriptions are all based upon careful observation and study. We notice particularly that he condemns the common habit of pouring laudanum or stimulating liquids into the ear, when it happens to ache. Without taking up a routine treatment, the way should be to examine the patient, see

what is the *cause* of the pain, and if possible remove it. Glycerine, too, which has been so much vaunted, meets with but little favor at his hands. In "nervous deafness", *irrespective of organic lesion of the brain*, he says he has nothing to offer but an ear trumpet and a recommendation not to quack.—There is one good caution as to prognosis, which it is well to remember, viz. "so long as ottirrhœa is present we never can tell how, when, or where it will end, or what it will lead to."

We can recommend this work as a valuable addition to a medical library. For sale by Cook & Co. M.

Walton's Operative Ophthalmic Surgery. Littel. Published by Lindsay & Blackiston, Phila.

We have long been in want of a work on the operative surgery of the eye, which should embrace all the latest additions to that branch, and this one is eminently fitted to fill the void, for it is full and concise, and strictly up to the time. Chloroform, which has been so useful in operations on other parts of the body, has strangely been neglected in those about the eye, and we are glad to see that Mr. Walton advocates its use, where steadiness is so desirable. He uses it in all cases, except in cataract by extraction, or wounds of the cornea to a similar extent. In iritis, instead of the old plan of giving calomel to an alarming extent, Mr. Walton is moderate in his use of mercury, and says he has had fully as good an effect from the use of two or three grains of the hydrargyrum cum creta, three times a day, without any of the after bad consequences. We never yet believed that transplanting either the cilia or the cornea was attended with good results, and although he speaks of both operations, their performance was not attended with success. Altogether, we like the book, and it is full of useful hints in relation to the treatment of accidents to which the eye is liable, and for which, heretofore, it was necessary to look over so many works. M.